Small Business Innovation Research/Small Business Tech Transfer

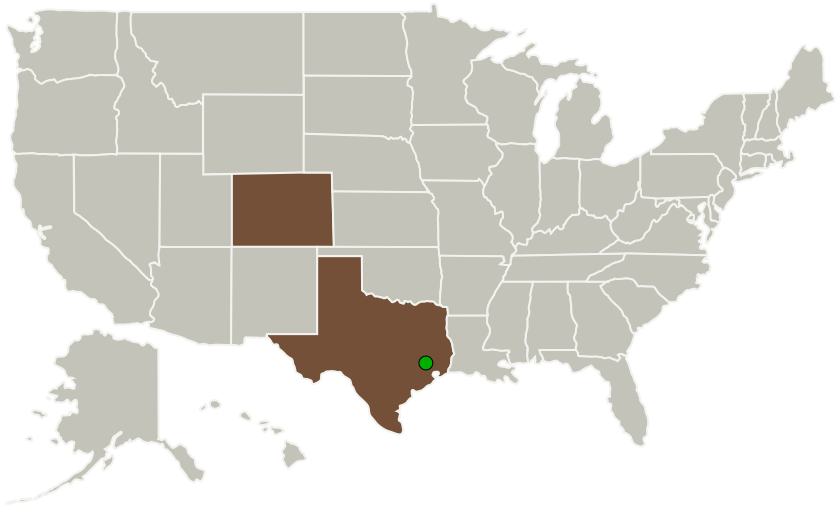
Elemental Resource Breakdown Approach to Crew-Vehicle Design, Phase I

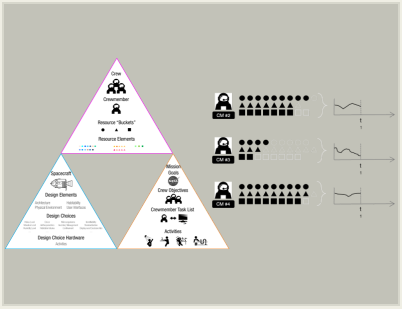
Completed Technology Project (2017 - 2018)

Project Introduction

TSRCo and CU are developing a framework to quantify and predict crew performance in various spacecraft designs in the context of the design process. The framework utilizes an elemental resource breakdown approach to relate the crew, the spacecraft design, and operations. The elements identified in the breakdown correspond to existing measures currently used in the physiological, cognitive, and psychological fields. This novel integration of currently existing metrics allows for the quantification of specific crew resource elements over the mission timeline and an in-depth analysis of the impacts caused by various spacecraft design choices.

Primary U.S. Work Locations and Key Partners





Elemental Resource Breakdown Approach to Crew-Vehicle Design, Phase I Briefing Chart Image

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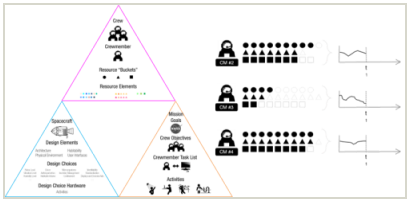
Organizations Performing Work	Role	Type	Location
The Space Research Company, LLC	Lead Organization	Industry Minority-Owned Business, Small Disadvantaged Business (SDB), Women-Owned Small Business (WOSB)	Boulder, Colorado
Johnson Space Center(JSC)	Supporting Organization	NASA Center	Houston, Texas
University of Colorado Boulder	Supporting Organization	Academia	Boulder, Colorado

Primary U.S. Work Locations	
Colorado	Texas

Images



Briefing Chart Image
Elemental Resource Breakdown Approach to Crew-Vehicle Design, Phase I Briefing Chart Image *(https://techport.nasa.gov/image/136313)*

Organizational Responsibility

Responsible Mission Directorate:
Space Technology Mission Directorate (STMD)

Lead Organization:
The Space Research Company, LLC

Responsible Program:
Small Business Innovation Research/Small Business Tech Transfer

Project Management

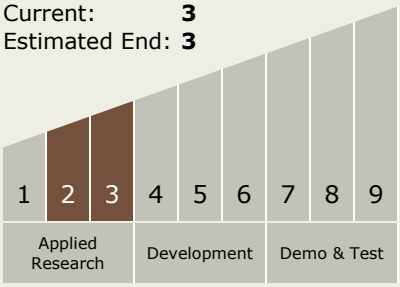
Program Director:
Jason L Kessler

Program Manager:
Carlos Torrez

Principal Investigator:
Christine Fanchiang

Technology Maturity (TRL)

Start: **2**
Current: **3**
Estimated End: **3**



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Technology Areas

Primary:

- TX06 Human Health, Life Support, and Habitation Systems
  - TX06.6 Human Systems Integration
    - TX06.6.1 Human Factors Engineering

Target Destinations

The Moon, Mars, Outside the Solar System, The Sun, Earth, Others Inside the Solar System